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ORCHARD REPLANT/INDUSTRY REVITALIZATION CONSULTATION

BACKGROUND PAPER 1

PRODUCTION/ GROWER PROFILE

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Executive Summary

In September 1999, Minister of Agriculture and Food Corky Evans, announced an intention to extend the orchard replant program for five years ($25 million) and to establish a $2 million industry development trust fund. Consultations leading to the development of a revitalization plan are being led by a facilitator contracted by the Ministry of Agriculture and Food. This report, one of four background papers, has been prepared to provide up-to-date information regarding the tree fruit industry.

The **objective** of this component of the research project is to provide a profile of the Okanagan tree fruit industry that identifies the key characteristics of the tree fruit farms and the structure of production in the region and compares it to similar profiles of competing jurisdictions. The profile will examine economic, demographic and technological data related to tree fruit farmers and identify trends where appropriate.

The average sized orchard in the Okanagan is 11 acres. Of the tree fruit farm operators under 35 years, 57.1% have orchards of 10 acres or more. For the 35 – 54 years of age group, 37.5% have orchards of 10 acres or more. For the 55 years and over group, 29.5% have orchards of 10 acres or more. In total, 35.8% of tree fruit farm operators have orchards of 10 acres or more.

Of the 2,890 farm operators reporting one acre or more of tree fruits, 2,743 or 94.9%, reported they owned land. A total of 503 or 17.3% of tree fruit farm operators reported leasing or renting a part of their orchard operation.

The five year (1994 to 1998) average price for all apples is 14.2 cents per pound. From an average high of 21.4 cents per pound, BC apple prices have decreased by 48.5% to their current level of 11 cents per pound. There is considerable variation in prices received for the various varieties as well as for the different grades of fruit within a variety. Crop size, variety mix, pack-outs and quality (grade) factors combine to determine a grower's overall returns from a particular crop.

Marketed production in 1998 increased substantially over its previous two-year low levels but is still below the 1992, 1993, and 1994 production levels. The value of production improved to over $37 million in 1998 from a low of just over $27 million in 1997.

Tree fruit farmers are growing more of the new varieties and less of the traditional varieties. The newer varieties have experienced production growth with recent plantings still to come on-stream. Red Delicious production decreased by nearly 13 million pounds from 1991 to 1997 when production was 81.9 million pounds. In the same time frame, production of Gala increased by nearly 12 million pounds to 12.8 million pounds. Fuji production increased by nearly 8.5 million pounds, Jonagold production by 2.8 million pounds and Empire production by 1.6 million pounds. Golden Delicious production decreased by 5 million pounds, McIntosh by 9 million pounds and Newtown by 2.8 million pounds. Spartan and Rome Beauty varieties also decreased production by 9.5 million pounds each.

In 1997, Okanagan tree fruit farm operators had total operator incomes (net farm income plus income from other sources) ranging from $24,841 to $59,422 depending on revenue class

category. The average total operator income for fruit farm operators in the Okanagan was $31,903. This compares to an average income for all taxpayers in the Okanagan-Similkameen Regional District of $30,757. Analysis of the available data shows that both net operating and taxable income at the individual Okanagan fruit farm operator level has decreased over the 1991 to 1997 period. Off-farm income has also decreased over the 1991 to 1997 period for all Okanagan fruit farm operators except for the $50,000 to $99,999 revenue class. The three smallest revenue classes all showed negative net taxable farm income with the two smallest classes both showing negative net farm operating incomes.

Of tree fruit farm operators, 70.6% have farm cash receipts of less than $50,000 per year. Only 29.4% have farm cash receipts of $50,000 or more while 12.6% have farm cash receipts of $100,000 or more.

Land and Buildings comprise in excess of 80% of the value of total farm assets for all revenue classes. The vast majority of the asset value within the tree fruit industry lies within the land base used in the production process.

Net Worth, or the difference between the total value of farm assets and total farm liabilities, has increased for all Okanagan fruit farm operator revenue classes except for the $10,000 to $24,999 revenue class. Increasing real estate values over the 1990s is a factor in the increasing net worth values.

From 1991 to 1997, the number of farmers with short term debt went down 16.3% but farms with long term debt increased 18.3%. The majority of the debt within the tree fruit industry belongs to the larger ($100,000 and over of farm cash receipts) operators. The average tree fruit farm had total farm assets of some $697,200 dollars with total farm liabilities of $116,700 leaving an average farm net worth of $628,400[1].

Based on the information available, estimates for 1998 indicate an overall decrease in the net operating and net taxable incomes of tree fruit growers. Estimates for the 1998 financial situation within the Okanagan tree fruit industry suggest a decrease in the working capital ratio of 9.44% and a decrease in net worth of 3.4%.

There are 2,890 farm operators operating 1,970 tree fruit farms located in the Okanagan according to the Statistics Canada 1996 Census of Agriculture. These growers have an average age of 51 years, have an average of 12 years of education and operate a combined total of 21,611 acres of orchard land. Farm operators under the age of 35 comprise 9.7% or 280 of the total farm operators while farm operators aged 35 to 54 account for 1,400 farm operators or 48.5%. The balance of farm operators are age 55 and over and they comprise 41.7% or 1,205 of the farm operators. The age 55 and over group of farm operators has an average age of 63.5 years.

Younger operators hold a higher proportion of total farm capital (e.g. farmers aged under 35 years represent 9.7% of farmers but hold 13.0% of farm capital).

Nearly half of the farm operators have education beyond the high school level. The under 35

[1] The net worth does not equal total farm assets minus total farm liabilities due to a combination of sampling error and the fact that not all farms in the sample have debt. Only those farms with debt are used to calculate the average per farm debt.

years group of tree fruit farm operators are more aggressive with replant as evidenced by the higher percentages of non-bearing or new plantings operated by this age group.

The data indicates that 57.6% of tree fruit farm operators worked off the farm at least some of the time. While 13.5% worked off the farm more than 40 hours a week, another 20.4% worked 20 to 40 hours per week off the farm. Some 8.5% worked off the farm less than 20 hours per week. The data suggests an inverse relationship between the level of education and the likelihood that the operator will work off the farm. For those farm operators with less than a grade 9 education, 79.8% work off the farm. This compares to 62.3% of those with grade 9-13, 55.9% of those with post secondary education and 34.9% of those with university education.

I) PREFACE

In September 1999, Minister of Agriculture and Food Corky Evans, announced an intention to extend the orchard replant program for five years ($25 million) and to establish a $2 million industry development trust fund. Final approval of these funds was made contingent upon industry developing a revitalization plan that will ensure the funds are used to the most effective and productive ends possible.

Consultations leading to the development of a revitalization plan are being led by a facilitator contracted by the Ministry of Agriculture and Food. To assist these consultations, four background papers have been prepared to provide up-to-date information regarding the tree fruit industry. These background papers are entitled *Production/Grower Profile*, *Packinghouse and Processing Profile*, *Marketing Profile* and *Economic Analysis of Orchard Replanting*.

Copies of these reports are available from the Ministry of Agriculture and Food and the Okanagan Valley Tree Fruit Authority.

II) OBJECTIVE & SCOPE

A) Objective

The objective of this component of the research project is to provide a profile of the Okanagan tree fruit industry that identifies the key characteristics of the tree fruit farms and the structure of production in the region and compares it to similar profiles of competing jurisdictions. The profile will examine economic and demographic and technological data related to tree fruit farmers and identify trends where appropriate.

B) Scope

The following farm characteristics and trends will be considered in the report including:

- Overview of the industry over time, in the Okanagan and in competing jurisdictions based on best available information. The profile will report on the following characteristics and trends:
  - Financial situation (liquidity, solvency, profitability, repayment capacity and financial efficiency where data permits).
  - Production by variety and type of operation
  - Major trends in production practices
  - Educational levels of the producer
  - Management ability of the producer
- Report on these characteristics and trends by industry segments
- An overview of the economics of production and the models or concepts that can be applied to measure:
  - Production costs to the producer by variety
  - Returns to the producer by variety

III) SIZE AND COMPOSITION OF TREE FRUIT PRODUCTION

A) Canadian Apple Production[2]

The five-year average (1993-1997) for Canadian apple production is 533,194 metric tonnes. 1998 Canadian apple production is reported at 497,831 metric tonnes which is 7% less than the five year average and a 1% decrease from 1997 (502,908). Larger yields from 1994 through 1996 pushed the five year average over one half million tonnes.

Apple Production By Province

Province	5 Year Ave. 1993 - 1997	1997	1998	% Change From 5 Year Ave. 1993 - 1997
Production (tonnes)				
Canada	**533,194**	**502,908**	**497,831**	**-7%**
B.C.	152,611	121,740	159,024	+4%
Ontario	240,356	245,582	220,774	-8%
Quebec	88,052	85,990	70,874	-20%
N.B.	4,693	4,011	4,681	-3%
N.S.	47,319	45,042	42,277	-11%
Value ($ '000)				
Canada	**166,278**	**181,815**	**156,009**	**-6%**
B.C.	53,239	45,750	50,080	-6%
Ontario	71,787	96,085	68,010	-5%
Quebec	27,929	25,450	22,665	-19%
N.B.	2,017	1,810	2,250	+12%
N.S.	11,206	11,425	12,700	+13%
Processed vs. fresh (in 1998) 103,424 tonnes /497,831 tonnes (21%)				

Source: Statistics Canada

Farm gate value in 1998 was $156 million, down 14% from 1997 ($182 million) and down 6% from the five year average ($166 million).

Volumes in British Columbia (B.C.) were slightly higher than normal in 1998, up 4% from average years. Some scald problems resulted from extreme heat during the growing season. Severe weather related problems (hail) affected B.C.'s 1997 crop. The major varieties produced in Canada are: McIntosh (40%), Red Delicious (17%) and Spartan (7%), followed by Cortland, Empire and Idared, each representing about 4% of total Canadian production.

B) Okanagan Production and Prices

The data and information that follows is derived in part from the Ministry of Agriculture and Food's Annual Horticultural Statistics (all data prior to 1996 is quoted from Total Sales) while the 1996, 1997, and 1998 data and information is based on packinghouse pool closings as collected by the Crop Insurance Branch of BCMAF. The 1996 and subsequent data represents approximately 95% of the total production for apples and pears while the data presented for soft fruits is estimated to represent about 35% of the total production.

The 1996 and subsequent data represents marketed production through the BC Tree Fruit, OSC, Westbank, and Okanagan North packing houses as well as for 1997 and 1998 fruit shipped to

[2] Agriculture & AgriFood Canada, *1998/1999 Canadian Fruit Situation and Trends*, url:http://www.agr.ca/misb/hort/fruit.html.

Sun Fresh. Production marketed directly from the farm, marketed through the independents or packinghouses other than those listed, is not included.

Apples and Pears

From an average high of 21.4 cents per pound, B.C. apple prices have decreased by 48.5% to the 1998 level of 11 cents per pound. Prices for the 1999 crop are estimated to be 15 to 20 cents per pound for fresh market apples. Marketed production in 1998 increased substantially over its previous two-year low levels but is still below the 1992, 1993, and 1994 production levels. The 1999 production is estimated to be down 25% to 30% from normal levels. The value of production improved to over $37 million in 1998 from a low of just over $27 million in 1997. The 1997 crop was severely damaged by hail with many growers leaving crop in the orchard because of its poor condition.

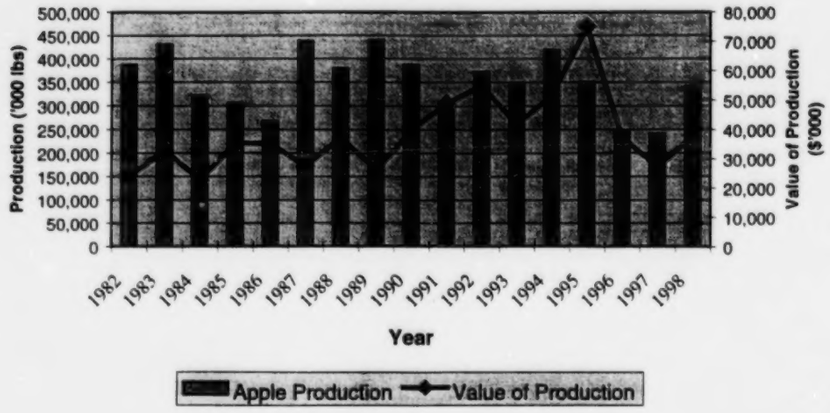
HISTORIC TREE FRUIT COMMODITY PRODUCTION, VALUE & PRICES
Okanagan

	Apples			Pears		
Year	Pounds	Value	Price	Pounds	Value	Price
	'000 lbs	$'000	$/lb	'000 lbs	$'000	$/lb
1994	417,942	51,367	0.123	13,420	2,647	0.197
1995	350,148	75,001	0.214	16,831	3,473	0.206
1996	246,152	37,332	0.152	10,936	2,966	0.271
1997	240,234	27,158	0.113	17,743	1,982	0.112
1998	340,842	37,629	0.110	14,305	2,997	0.210
5 Year Average			**0.142**			**0.199**

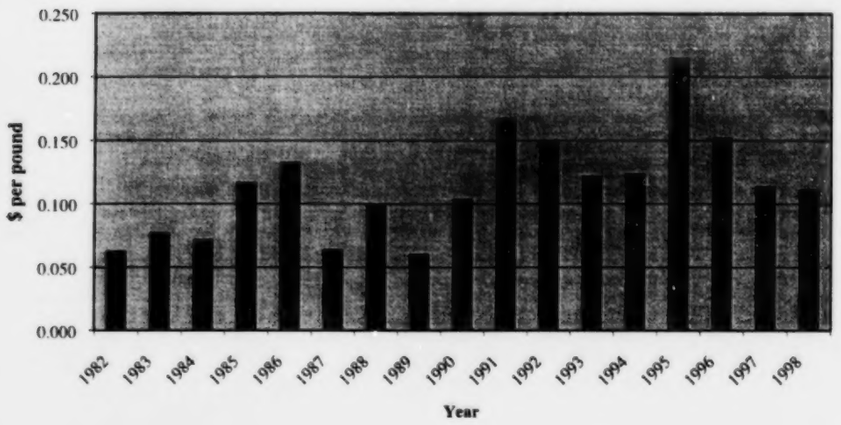
The five year (1994 to 1998) average price for all apples is 14.2 cents per pound. There is considerable variation in prices received for the various varieties as well as for the different grades of fruit within a variety. Crop size, variety mix, pack-outs and quality (grade) factors combine to determine a growers overall returns from a particular crop.

Pear prices improved in 1998 over their 1997 levels to remain slightly above the five-year average price. The 1998 marketed value of pears returned to its 1996 levels but was still below its previous high level in 1995.

BC Apple Production & Value



BC Apple Prices



The following chart indicates the world's leading apple growers and relates BC production to them. BC's 1998 production of some 159,000 metric tons, while nearly one-third of the Canadian total apple production, is less than 1% of the total estimated production in China.

Apricots and Peaches/Nectarines

The majority, 65% or more, of the soft fruit production, is marketed through direct market channels and as such are not reflected in the data and information that follows. The tables that follow represent that fruit which moves through BC Tree Fruit, OSC, Westbank, and Okanagan North with the 1997 and 1998 numbers including Sun Fresh as well.

HISTORIC TREE FRUIT COMMODITY PRODUCTION, VALUE & PRICES
Okanagan

Year	Apricots				Peaches/Nectarines			
	Pounds '00 lbs	Value $'00	Price $/lb	Price -Nat. Culls	Pounds '00 lbs	Value $'00	Price $/lb	Price -Nat. Culls
1994	2,849	741	0.260	0.234	13,811	3,530	0.256	0.230
1995	3,003	994	0.331	0.298	13,633	4,198	0.308	0.277
1996	3,719	1,628	0.438	0.394	12,848	4,965	0.386	0.348
1997	7,934	2,087	0.263	0.237	27,948	8,756	0.313	0.282
1998	3,466	1,381	0.398	0.358	23,696	6,939	0.293	0.249
5 Year Average			0.338	0.304			0.311	0.277

Apricot prices paid to growers have increased since 1994. Volumes marketed are volatile with marketed production volumes doubling and then falling to less than half of the previous years level between 1996 and 1998. The majority of this crop is also indicated to be marketed outside of the packinghouse channels included in this data.

Sweet Cherries and Sour Cherries

Commercial sour cherry production is no longer occurring in the Okanagan Valley. However, sweet cherry production has expanded significantly over the past five years as indicated by the increased volume of sweet cherries moving through the packinghouse system. It is estimated that as much as 80% of the sweet cherry production moves through channels other than the packinghouse system represented by this data.

HISTORIC TREE FRUIT COMMODITY PRODUCTION, VALUE & PRICES
Okanagan

Year	Sour Cherry			Sweet Cherry			
	Pounds '000 lbs	Value $'000	Price $/lb	Pounds '00 lbs	Value $'00	Price $/lb	Price -Nat. Culls
1994	2,766	322	0.116	9,250	7,729	0.836	0.710
1995	2,122	204	0.096	7,289	9,798	1.344	1.143
1996	1,494	149	0.100	8,492	9,818	1.156	0.983
1997	947	66	0.070	12,145	10,798	0.889	0.756
1998			0.000	26,003	13,360	0.514	0.437
5 Year Average			0.076			0.948	0.806

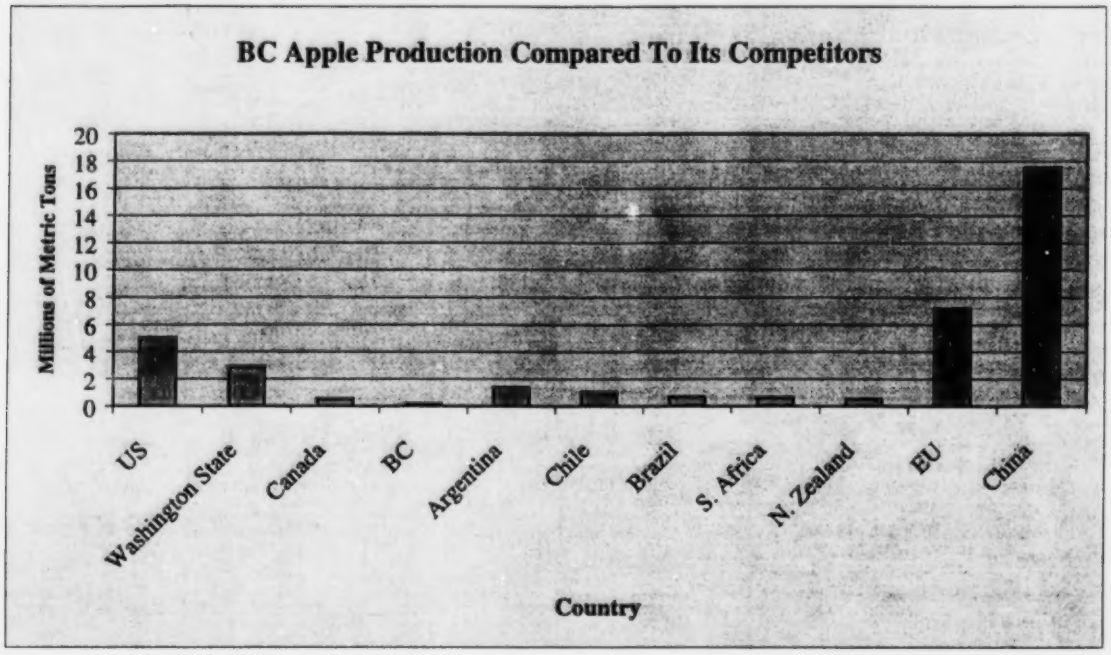
Cherries, peaches and pears are the notable soft fruits produced in the Okanagan. Over $13 million of cherries were produced in 1998, nearly $7 million of peaches and some $3 million of pears. New planting of cherries in particular are producing high value quality crops for some growers.

C) The World Situation[3]

World apple production has increased 4% over 1997-98's output of 41 million metric tonnes (MT). World apple exports are forecasted at 4 million MT; similar to 1997-98's. In 1998/1999 production of the world's major producers are shown in the following table.

World Major Producers
Production in Metric Tonnes.

	1998-1999	1997-1998	% change
US	5,000,000	4,720,000	+ 6
Canada	497,831	502,908	- 1
Argentina	1,351,315	1,253,626	+ 7.8
Chile	1,010,000	970,000	+ 4
Brazil	690,000	708,000	- 2.5
S. Africa	638,000	648,720	-1.7
N. Zealand	535,720	479,650	+11.7
EU	7,177,000	7,400,000	- 3



D) Varietal Make-Up of Industry and Varietal Grower Returns

The relative magnitudes of tree fruit crop production is indicated in the following table. Apples are the dominant tree fruit crop in British Columbia and in the Okanagan Valley. Cherries, Pears, and peaches/nectarines are other tree fruit crops of significance.

BC Tree Fruit Production Ranked by Value – 1997, 1998p

[3] Agriculture & AgriFood Canada, *1998/1999 Canadian Fruit Situation and Trends*, url:http://www.agr.ca/misb/hort/fruit.html.

Commodity	TOTAL SALES 1997		TOTAL SALES 1998	
	Quantity 000 lb	Value $'000	Quantity 000 lb	Value $'000
Apples	269,238	32,397	340,842	37,629
Cherries – Sweet	4,850	5,384	26,003	13,360
Peaches/Nectarines	11,387	4,065		
Pears	17,777	2,495	14,305	2,997
Apricots	1,567	643	3,466	1,381
Prunes/Plums	1,703	450		

The 1997 data in the table above is derived from the BC Ministry of Agriculture and Food - Horticultural Statistics for 1997 while the 1998 data is derived from the BCMAF Agricultural Risk Management Branch's Crop Insurance statistics for 1998.

The following table shows the fundamental shift in the varietal structure of the Okanagan orchards that has occurred since 1991. The traditional varieties such as Golden Delicious, Red Delicious, McIntosh, Rome, and Spartan have all experienced decreased production volumes. The newer varieties have experienced production growth with recent plantings still to come on-stream. Varieties such as Empire, Fuji, Gala, and Jonagold are growing in production volume.

1997 to 1991 Varietal Comparison of Apples

Variety	Production 1997	Production 1991	Change	% Change
Empire	1,833,000	251,826	1,581,174	627.9%
Fuji	8,504,000	67,471	8,436,529	12503.9%
Gala	12,756,000	763,380	11,992,620	1570.9%
Golden Delicious	26,807,000	31,854,075	-5,047,075	-15.8%
Granny Smith	984,000	902,678	81,322	9.0%
Jonagold	3,948,000	1,138,729	2,809,271	246.7%
McIntosh	69,697,000	78,751,066	-9,054,066	-11.5%
Newtown	490,000	3,253,558	-2,763,558	-84.9%
Red Delicious	81,871,000	94,855,202	-12,984,202	-13.7%
Rome Beauty	654,000	1,610,081	-956,081	-59.4%
Spartan	44,015,000	44,966,554	-951,554	-2.1%

Red Delicious production decreased by nearly 13 million pounds from 1991 to 1997. In the same time frame, production of Gala increased by nearly 12 million pounds. Fuji production increased by nearly 8.5 million pounds, Jonagold production by 2.8 million pounds and Empire production by 1.6 million pounds. Golden Delicious production decreased by 5 million pounds, McIntosh by 9 million pounds and Newtown by 2.8 million pounds. Spartan and Rome Beauty varieties also decreased production by 9.5 million pounds each.

Average annual prices received for the various apple varieties are set forth in the following table.

Okanagan Apple Variety and Price Statistics For Selected Varieties												
VARIETY	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average Price[4]
FUJI	0.000	0.394	0.469	0.562	0.688	0.309	0.415	0.556	0.423	0.202	0.195	0.358
MCINTOSH	0.116	0.067	0.119	0.165	0.135	0.087	0.114	0.152	0.110	0.102	0.091	0.114
RED DEL	0.079	0.034	0.089	0.156	0.153	0.081	0.116	0.209	0.131	0.102	0.070	0.126
GALA	0.684	0.701	0.529	0.629	0.693	0.459	0.493	0.628	0.464	0.361	0.289	0.447

The table above indicates how the prices of new varieties becomes established at above average levels and then slowly decrease over time. For example, Fuji prices increased from 1989 to 1992. Over the period 1993 to 1998, the price for Fuji slowly decreased but remained above the price of Red Delicious and McIntosh. Gala follows a similar pattern.

Pear variety and price statistics are set forth in the following table. There are significant differences in the prices received for the different varieties of pears.

Okanagan Pear Variety and Price Statistics												
VARIETY	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average Price
BARTLETT	0.166	0.163	0.130	0.198	0.173	0.145	0.199	0.224	0.299	0.105	0.256	0.216
BOSC	0.203	0.093	0.206	0.153	0.179	0.213	0.247	0.247	0.310	0.289	0.294	0.277
D'ANJOU	0.127	0.120	0.132	0.135	0.187	0.138	0.180	0.189	0.261	0.114	0.175	0.184
FLEMISH	0.160	0.139	0.087	0.087	0.058	0.091	0.134	0.134	0.238	0.072	0.122	0.140
ALL PEARS	0.153	0.157	0.143	0.172	0.188	0.153	0.197	0.206	0.271	0.112	0.210	0.199

1997 Varietal Structure of Okanagan Pear Industry					
Variety	Production '000 lbs	% of Production	Value $'000	% of Value	Average $/lb
Bartlett	9,596	54.0%	1,247	49.5%	0.1299
D'Anjou	7,760	43.7%	1,164	46.2%	0.1500
Other Pears	407	2.3%	106	4.2%	0.2604
Total Pears	**17,763**		**2,517**		**0.1417**

1) Ontario

McIntosh makes up 27.3% of the Ontario 1998 production at 137.6 million pounds. Red Delicious is the second major variety at 18.3% of production at 92.3 million pounds. Empire makes up 17.3% at 87.5 million pounds.

The 1998 total value of production to growers was $64.8 million or an average per pound price of 12.8 cents.

[4] Average Price is for the most recent 5 year period: 1994 to 1998.

2) United States[5]

Washington State produces nearly half of the United States 1997 apple crop with production totaling 5.0 billion pounds and an average price received by growers of 16.5 cents per pound and a fresh market apple average price of 21.3 cents per pound.

Washington State is also a significant producer of sweet cherries (184 million pounds or 41% of the US total in 1997) and pears (910 million pounds or 44% of the US total in 1997).

California apple production in 1997 was 962 million pounds with an average grower price of 16.8 cents per pound. California sweet cherry production was 98.4 million pounds in 1997 with an average grower price of 12.7 cents per pound.

Oregon and New York State are two other significant tree fruit producing regions within the United States.

3) Southern Hemisphere

Apple Production In Southern Hemisphere[6]
(thousands of metric tons)

Region	Average 1979-81	Average 1989-91	Average 1992-94	Average 1995-97	Prelim. 1998
New Zealand	211	351	469	548	501
Australia	946	1,015	1,004	1,317	1,347
Brazil	87	516	666	698	787
Chile	251	705	827	853	880
South Africa	395	525	556	549	515
Total	**2,207**	**3,429**	**3,839**	**4,282**	**4,390**

Production in the Southern Hemisphere continues to grow. Production in Brazil and Chile has grown significantly since the early 1990's. New Zealand production has shown modest increases since the early 1990's.

4) China

Estimates of apple production in China are taken from the 1999 World Apple Review by Dr. Desmond O'Rourke. Fuji and Gala are thought to be the dominant varieties.

Apple Production In China[7]
With World Production Comparison
(thousands of metric tons)

Region	Average 1979-81	Average 1989-91	Average 1992-94	Average 1995-97	Prelim. 1998
China	2,746	4,469	8,928	16,100	17,508
Rest of World	31,725	35,551	39,345	38,285	38,552
World	**34,471**	**40,020**	**48,273**	**54,385**	**56,060**
China as % Of World	7.9%	11.7%	18.5%	29.6%	31.2%

[5] NASS/USDA statistics:
[6] O'Rourke, Dr. Desmond, 1999 World Apple Review, page 15.
[7] O'Rourke, Dr. Desmond, 1999 World Apple Review, page 8

IV) FINANCIAL POSITION OF OKANAGAN TREE FRUIT GROWERS

Analysis of the available Taxfiler and Whole Farm Insurance Program data indicates that the financial situation has deteriorated over the 1991 to 1997 period. This is evidenced by decreases in both net operating and taxable income at the individual Okanagan fruit farm operator level. Off-farm income has also decreased over the 1991 to 1997 period for all Okanagan fruit farm operators except for the $50,000 to $99,999 Revenue. Net Worth, or the difference between the total value of farm assets and total farm liabilities, has increased for all Okanagan fruit farm operator revenue classes except for the $10,000 to $24,999 revenue class. From 1991 to 1997, there was a decrease of 16.3% in fruit farm operators with short-term debt but an offsetting 18.3% increase in fruit farm operators with long-term debt. The majority of the debt within the tree fruit industry belongs to the larger ($100,000 and over of farm cash receipts) operators.

Okanagan Tree Fruit Farms
Working Capital Comparison

		Sales Class						
Variable	Data	Total	Less Than $10,000	$10,000 to $24,999	$25,000 to $49,999	$50,000 to $99,999	$100,000 to $249,999	$250,000 to $499,999
Working Capital - 1997	Per Farm	0.995	na	0.681	0.662	0.989	1.412	1.170
Working Capital - 1991	Per Farm	2.470	na	15.151	3.456	3.298	2.048	na

Working Capital ratio or the relationship of current assets to current liabilities, has decreased over the 1991 to 1997 period. The majority of tree fruit farms had more than adequate current assets to cover current liabilities in 1991. By 1997 this situation had changed substantially with only the $100,000 and above revenue classes having positive working capital.

The Summary Table *Total Operator Income Okanagan Tree Fruit Farm Operators*, indicates that Okanagan tree fruit farm operators had total operator incomes (net farm income plus income from other sources) ranging from $24,841 for the $25,000 to $49,999 revenue class to $59,422 for the $250,000 to $499,999 revenue class. The average Total Operator Income for fruit farm operators in the Okanagan was $31,903. This compares to an average income for all taxpayers in the Okanagan-Similkameen Regional District of $30,757.

The table, *Okanagan Tree Fruit Farms 1997 Revenue & Expenses* indicates that, on average, Okanagan tree fruit farms had a net operating income of $3,990 per farm but that these same farms incurred a net taxable income (loss) of $1,508. This ranged from a net operating income loss of $8,829 per farm for the less than $10,000 of farm revenues group to a net operating income profit of $39,917 for the $250,000 to $499,999 revenue class. Similarly, The less than $10,000 group had the largest net taxable income loss at $14,238 per farm while the $250,000 to $499,999 group had the largest net taxable income profit at $23,060. In fact, the three smallest revenue categories all experienced net taxable income losses: the less than $10,000 group at $14,238; the $10,000 to -$24,999 group at -$5,370; and the $25,000 to $29,999 group at -$2,095.

The table, *Okanagan Tree Fruit Farms 1997 Off-Farm Income* indicates that tree fruit operators derive a substantial proportion of their income from off-farm sources. Adding the net operating income to the total off-farm income provides an indication of the total income available to a farm

operator.

Summary Table Total Per Farm Operator Income Okanagan Tree Fruit Farm Operators								
Variable	**Data**	**Total**	**Less Than $10,000**	**$10,000 to $24,999**	**$25,000 to $49,999**	**$50,000 to $99,999**	**$100,000 to $249,999**	**$250,000 to $499,999**
Net Farm Operating Income	Total Estimate	6,902,012	-4,370,352	-756,668	714,615	2,891,831	4,772,037	2,594,637
	Per Farm	3,990	-8,829	-2,481	2,166	9,972	21,209	39,917
Total Off-Farm Income	Total Estimate	62,663,932	23,585,135	12,438,228	10,203,832	9,927,786	5,224,247	1,560,365
	Per Farm	27,913	37,736	31,489	22,675	24,819	18,015	19,505
Total Operator Income	Total Estimate	69,565,944	19,214,783	11,681,560	10,918,447	12,819,617	9,996,284	4,155,002
	Per Farm	31,903	28,907	29,008	24,841	34,791	39,224	59,422

Okanagan Tree Fruit Farms 1997 Off-Farm Income								
		Sales Class						
Variable	**Data**	**Total**	**Less Than $10,000**	**$10,000 to $24,999**	**$25,000 to $49,999**	**$50,000 to $99,999**	**$100,000 to $249,999**	**$250,000 to $499,999**
# of Farms	Total Estimate	2285	630	400	455	410	305	85
Total Wages & Salaries	Total Estimate	23,555,872	5,621,227	8,161,591	2,646,689	4,233,171	2,445,842	588,694
	Per Farm	25,886	33,066	35,485	17,075	22,882	19,567	16,820
Investment Income	Total Estimate	8,254,022	2,761,883	1,069,238	1,214,961	1,660,870	1,330,195	243,845
	Per Farm	4,855	6,499	4,455	3,375	4,745	5,429	3,251
Pension Income	Total Estimate	15,013,503	23,585,135	1,740,544	2,377,004	669,432	294,031	92,659
	Per Farm	27,913	22,750	11,229	12,849	12,171	9,801	9,266
Total Off-Farm Income	Total Estimate	62,663,932	23,585,135	12,438,228	10,203,832	9,927,786	5,224,247	1,560,365
	Per Farm	27,913	37,736	31,489	22,675	24,819	18,015	19,505

Okanagan Tree Fruit Farms 1997 Revenue & Expenses								
		Sales Class						
Variable	Data	Total	Less Than $10,000	$10,000 to $24,999	$25,000 to $49,999	$50,000 to $99,999	$100,000 to $249,999	$250,000 to $499,999
# of Farms	Total Estimate	1,730	495	305	330	290	225	65
Fruit Revenue	Total Estimate	96,669,743	1,201,625	4,482,422	9,821,965	18,797,847	30,904,519	18,431,174
	Per Farm	55,878	2,428	14,696	29,764	64,820	137,353	283,557
Total Crop Revenue	Total Estimate	97,327,280	1,211,522	4,500,631	9,869,765	18,908,034	31,025,803	18,668,731
	Per Farm	56,259	2,448	14,756	29,908	65,200	137,892	287,211
Total Operating Rev.	Total Estimate	110,140,126	1,940,982	5,128,833	11,888,052	20,867,899	34,463,679	21,428,395
	Per Farm	63,665	3,921	16,816	36,024	71,958	153,172	329,668
Gross Farm Income for Tax Purposes	Total Estimate	112,480,069	2,055,619	5,148,140	12,160,212	21,517,372	35,111,442	21,500,996
	Per Farm	65,017	4,153	16,879	36,849	74,198	156,051	330,785
Total Operating Exp.	Total Estimate	103,238,113	6,311,335	5,885,502	11,173,437	17,976,068	29,691,643	18,833,758
	Per Farm	60,197	12,700	19,297	35,471	61,986	131,963	289,750
Total Expenses for Tax Purposes	Total Estimate	115,087,536	9,103,388	6,786,034	12,851,590	20,233,446	31,852,232	20,002,121
	Per Farm	66,525	18,391	22,249	38,944	69,771	141,565	307,725
Net Operating Income	Total Estimate	6,902,012	-4,370,352	-756,668	714,615	2,891,831	4,772,037	2,594,637
	Per Farm	3,990	-8,829	-2,481	2,166	9,972	21,209	39,917
Net Taxable Income	Total Estimate	-2,607,467	-7,047,769	-1,637,894	-691,378	1,283,926	3,259,210	1,498,875
	Per Farm	-1,508	-14,238	-5,370	-2,095	4,427	14,486	23,060

A) Estimates of 1998 Income and Expenses

Data for the 1998 economic performance of the Okanagan Tree Fruit Industry are not available from Statistics Canada nor was there time available to conduct a reliable survey of growers. The 1998 preliminary Farm Cash Receipts estimates published by the Ministry of Agriculture and Food place the 1998 tree fruit farm cash receipts at $64,243,000 which is a 3.3% increase from the revised 1997 estimate of farm cash receipts for tree fruits of $62,206,000.

Crop Insurance indemnity payments to tree fruit operators total $716,030 for 1998 as compared to the $14,138,115 paid in 1997. Whole Farm Insurance Program payments to tree fruit operators totaled $1,803,121 for 1997 but increased to $6,083,328 in 1998.

The total income for tree fruit operators is (based on the above information) estimated at $7.1 million for 1998 which compares to $7.8 million in 1997. Increases in farm expenses are based on the Farm Input Price Index (FIPI) which was at 189.8 for the second quarter of 1997 but had increased to 197.9 by the second quarter of 1998. This amounts to a 4.3% increase in input costs in the space of a single year. The base for the FIPI is 1986 = 100.

The table, *1998 Estimates for Okanagan Tree Fruit Revenues and Expenses*, sets forth the estimates for 1998 Revenues and Expenses for the Okanagan Tree Fruit farm operators. The 1998 figures are based on the assumptions as outlined above.

Based on the information available, there has been an overall decrease in the net operating and

net taxable incomes of tree fruit growers. The estimates have been made at the industry level rather than at the individual revenue categories.

It is also imperative to bear in mind that all the analysis set forth is based on average performance. There will be those that will experience better than average performance and those that experience poorer than average performance.

B) Assets and Liabilities for Tree Fruit Operators

The Taxfiler data for *Okanagan Tree Fruit Farms 1997 Assets & Liabilities* indicates that the average farm had total farm assets of some $697,200 dollars with total farm liabilities of $123,500 leaving an average total net worth of some $573,700 or $628,400 including non-farm assets and liabilities.

1998 Estimates for Okanagan Tree Fruit Revenues and Expenses

Variable	Data	1997 Total	1998 Estimate	1998 to 1997 Change
# of Farms	Total Estimate	1,730	1,730	na
Fruit Revenue	Total Estimate	96,669,743	88,066,136	-8,603,607
	Per Farm	55,878	50,905	-4,973
Total Crop Revenue	Total Estimate	97,327,280	88,665,152	-8,662,128
	Per Farm	56,259	51,252	-5,007
Total Operating Rev.	Total Estimate	110,140,126	100,337,655	-9,802,471
	Per Farm	63,665	57,999	-5,666
Gross Farm Income for Tax Purposes	Total Estimate	112,480,069	102,469,343	-10,010,726
	Per Farm	65,017	59,231	-5,786
Total Operating Exp.	Total Estimate	103,238,113	107,677,352	4,439,239
	Per Farm	60,197	62,241	2,044
Total Expenses for Tax Purposes	Total Estimate	115,087,536	120,036,300	4,948,764
	Per Farm	66,525	69,385	2,860
Net Operating Income	Total Estimate	6,902,012	-7,339,697	-14,241,709
	Per Farm	3,990	-4,243	-8,233
Net Taxable Income	Total Estimate	-2,607,467	-17,566,957	-14,959,490
	Per Farm	-1,508	-10,154	-8,646

Farm liabilities ranged from $79,781 for the $10,000 to $24,999 revenue class to $545,382 for the $250,000 to $499,999 revenue class. Net worth ranged from $335,380 for the $10,000 to $24,999 revenue class to $2,197,914 for the $250,000 to $499,999 revenue class. The value of Land and Buildings ranges from $321,863 for the $10,000 to $24,999 revenue class to $2,184,669 for the $250,000 to $499,999 revenue class.

The value of Land and Buildings is greater than 90% of the Total Net Worth of all revenue classes except for the $100,000 to $249,999 revenue class where the value of Land and Buildings is 88.8% of the Total Net Worth. Current Assets and Machinery and Equipment Assets account for a relatively small component of the total assets or of net worth. The vast majority of the asset value within the tree fruit industry lies within the land base used in the production process.

The table *1997 Assets & Liabilities Distribution of Debt* indicates that, on average, 35.6% of the tree fruit farms had some short term debt while 68.1% of the tree fruit farms had some long term debt in 1997. This compares to 51.9% of farms with some short-term debt and 49.8% of farms with some long-term debt in 1991.

Okanagan Tree Fruit Farms
1997 Assets & Liabilities
Distribution of Debt

		Sales Class						
Variable	**Data**	**Total**	**Less Than $10,000**	**$10,000 to $24,999**	**$25,000 to $49,999**	**$50,000 to $99,999**	**$100,000 to $249,999**	**$250,000 to $499,999**
# of Farms	Total Estimate	675	na	140	205	170	100	35
# With short-term debt	Total Estimate	240	na	40	80	55	35	20
% Farms with ST Debt		35.6%	na	28.6%	39.0%	32.4%	35.0%	57.1%
# With Long-term Debt	Total Estimate	460	na	85	115	130	85	30
% Farms with LT Debt		68.1%	na	60.8%	56.1%	76.5%	85.0%	85.7%

Information on the "current" financial situation of Okanagan tree fruit farms will be based on estimates derived largely from 1997 Taxfiler data extrapolated to 1998 with information and knowledge gained from discussions with industry personnel and financial representatives dealing with the tree fruit industry.

1998 Estimates for Okanagan Tree Fruit Assets and Liabilities				
Variable	**Data**	**1997 Total**	**1998 Estimates**	**1998 to 1997 Change**
# of Farms	Total Estimate	675	675	na
Total Current Assets	Total Estimate	24,003,593	22,803,413	-1,200,180
	Per Farm	35,561	33,783	-1,778
Machinery & Equip. Assets	Total Estimate	59,894,573	59,894,573	-
	Per Farm	63,047	63,047	-
Land & Buildings Assets	Total Estimate	552,918,920	536,331,352	-16,587,568
	Per Farm	604,283	586,155	-18,128
Total Long Term Assets	Total Estimate	638,354,086	619,203,463	-19,150,623
	Per Farm	671,952	651,793	-20,159
Total Farm Assets	Total Estimate	662,357,679	642,486,949	-19,870,730
	Per Farm	697,219	676,302	-20,917
Total Current Liabilities	Total Estimate	8,571,070	8,999,624	428,554
	Per Farm	35,713	37,499	1,786
Total Long Term Liabilities	Total Estimate	56,795,955	56,795,955	-
	Per Farm	123,469	123,469	-
Total Farm Liabilities		65,367,025	65,795,579	428,554
		116,727	117,492	765
Total Net Worth	Total Estimate	596,990,654	576,691,370	-20,299,284
	Per Farm	628,411	607,043	-21,368
Working Capital	Per Farm	0.995	0.901	-0.094

Based on discussion with industry personnel and financial institutions, the following table is presented as an estimate of the 1998 financial situation for Okanagan tree fruit farms.

Overall, it is estimated that there has been a decrease in the working capital ratio of 9.44%. The net worth of the average farm has decreased from over $628,000 in 1997 to slightly over $607,000 in 1998 or a decrease of over $21,000 (an estimated 3.4%)

The distribution of the impacts and effects of the changes in financial position will vary by the size and management of the individual operation.

Financial Ratios

Based on the foregoing estimates of the 1998 financial situation, the following table is presented to indicate selected financial ratios.

		1998 to 1997 Financial Ratio Comparison	
Liquidity		**1997**	**1998**
Current Ratio		0.996	0.901
Working Capital		-152	-3,716
Solvency			
Debt/Asset Ratio	Per Farm	0.167	0.174
Equity/Asset Ratio	Per Farm	0.901	0.898
Debt/Equity Ratio	Per Farm	0.186	0.194

V) DEMOGRAPHICS OF OKANAGAN TREE FRUIT GROWERS

There are 2,890 farm operators operating 1,970 tree fruit farms located in the Okanagan according to the Statistics Canada 1996 Census of Agriculture. These growers have an average age of 51.0 years, have an average of 12.1 years of education and operate a combined total of 21,611 acres of orchard land.

The combined total acreage operated by all farm operators will exceed the actual acreage because of multiple operators on some of the farm units. Thus, acreages, revenues, etc. of multiple operator farms are double counted. However, it is the relative numbers that are of importance in the following tables and analysis as opposed to the absolute numbers. For those farms in the Okanagan that reported one acre or more of tree fruits there are 1,065 farm operators that are the sole farm operator while 1,825 farm operators are engaged in the operation of a farm where there are two or more farm operators.

In the Okanagan, 280 or 9.7% of the orchard operators are under 35 years of age. These 280 orchard operators average 28.8 years of age with 12.4 years of education and account for 4,052 acres or 13.9% of the orchard acreage reported as operated acreage.

Those orchard operators age 35 to 54 years of age account for 1,400 or 48.45% of the total orchard operators. Their average age is 44.6 years and they account for 15,560 acres or 53.3% of the total reported orchard acreage.

Those orchard operators 55 years of age and over have an average age of 63.5 years and account for 1,205 orchard operators or 41.7% of the total operators. This group operates 9,563 acres or 32.7% of the total reported orchard acreage.

Average Age and Average Years of Schooling By Education Level and Age Including distribution of Tree Fruit Farms by Number of Farms and Area in Acres					
level of education of farm operators	**age of farm operators**	**number of farms operators reporting 1+ acre tree fruit**	**average age of farm operators**	**average years of schooling of farm operators**	**tree fruits area in acres**
all farm operators	under 35 years	280	28.8	12.4	4,052.5
all farm operators	35-54 years	1,400	44.6	12.8	15,559.5
all farm operators	55 years and over	1,205	63.5	11.3	9,563.0
all farm operators	**all farm operators**	**2,890**	**51.0**	**12.1**	**29,223.1**
university	under 35 years	70	29.9	15.2	745.8
university	35-54 years	375	44.9	16.2	4,147.5
university	55 years and over	180	61.7	17.7	1,290.7
university	**all farm operators**	**630**	**47.9**	**16.5**	**6,240.2**
post secondary	under 35 years	75	30.5	13.8	1,008.4
post secondary	35-54 years	405	43.9	13.8	4,245.8
post secondary	55 years and over	310	63.6	13.3	2,762.2
post secondary	**all farm operators**	**795**	**50.4**	**13.6**	**8,067.1**
grade 9-13	under 35 years	105	29.3	11.5	1,801.9
grade 9-13	35-54 years	480	44.1	11.6	5,215.3
grade 9-13	55 years and over	405	63.1	11.1	3,115.5
grade 9-13	**all farm operators**	**995**	**50.4**	**11.3**	**10,176.7**
less than grade 9	under 35 years	25	19.0	4.1	441.5
less than grade 9	35-54 years	140	47.6	5.1	1,961.1
less than grade 9	55 years and over	310	65.1	5.9	2,392.2
less than grade 9	**all farm operators**	**470**	**57.5**	**5.5**	**4,739.6**

The distribution of these orchard operators by level of education reveals that 630 or 21.8% have university education while 470 or 16.3% have less than a grade 9 education. This group of orchard operators reported 4,740 acres or 16.2% of the total orchard acreage. Their average age is 57.5 years and they have an average of 5.5 years of education

The orchard operators with post secondary education account for 795 or 27.5% of the orchard operators. They have an average age of 50.4 years and have 13.6 years of education. They reported 8,067 acres or 27.6% of the total orchard acreage.

Those orchard operators with a grade 9 to 13 level of education are the largest group with a total of 995 or 34.4% of the total orchard operators. Their average age is 50.4 years of age and they have 11.3 years of education on average. This group reported 10,177 acres or 34.8% of the total orchard acreage.

The 1996 Census of Agriculture collected data on bearing and non-bearing orchards on the basis of number of trees but did not collect data on bearing and non-bearing acres. Thus, the following table is presented on the basis of tree count.

Distribution of Bearing and Non-Bearing Fruit Trees By Level of Education and Age					
level of education of farm operators	age of farm operators	tree fruits total number of trees	tree fruits number of bearing trees	tree fruits number of non-bearing trees	% number of non-bearing trees
all farm operators	under 35 years	1,120,450	848,335	272,115	24.29%
all farm operators	35-54 years	4,591,110	3,890,573	700,537	15.26%
all farm operators	55 years and over	2,087,312	1,765,444	321,868	15.42%
all farm operators	**all farm operators**	**7,810,745**	**6,514,043**	**1,296,703**	**16.60%**
university	under 35 years	342,199	139,957	202,242	59.10%
university	35-54 years	1,333,518	1,030,468	303,049	22.73%
university	55 years and over	241,166	208,605	32,561	13.50%
university	**all farm operators**	**1,942,280**	**1,390,475**	**551,804**	**28.41%**
post secondary	under 35 years	246,112	225,251	20,861	8.48%
post secondary	35-54 years	1,244,267	1,100,279	143,988	11.57%
post secondary	55 years and over	901,551	801,538	100,013	11.09%
post secondary	**all farm operators**	**2,407,029**	**2,140,539**	**266,490**	**11.07%**
grade 9-13	under 35 years	353,845	336,957	16,888	4.77%
grade 9-13	35-54 years	1,434,320	1,256,893	177,427	12.37%
grade 9-13	55 years and over	554,790	403,608	151,181	27.25%
grade 9-13	**all farm operators**	**2,351,795**	**2,004,494**	**347,301**	**14.77%**
less than grade 9	under 35 years	154,082	135,140	18,942	12.29%
less than grade 9	35-54 years	581,613	505,796	75,817	13.04%
less than grade 9	55 years and over	386,826	349,571	37,255	9.63%
less than grade 9	**all farm operators**	**1,108,730**	**978,436**	**130,294**	**11.75%**

An examination of the table above clearly indicates that the younger (under 35 years of age) farm operators have more non-bearing trees than any other age group. While the "under 35 years of age" group account for 9.7% of the farm operators, accounting for 14.3% of the total number of fruit trees, they account for 20.9% of the non-bearing or newer planted trees. Farm operators under age 35 with university education have 60.9% of their trees in the non-bearing category.

Owned Versus Leased or Rented Farmland

Of the nearly 82,000[8] acres of total farm area reported operated by tree fruit farm operators in the Okanagan, 87.4% or 71,627 acres is owned by the farm operator. Some 10,291 or 12.6% is leased or rented from others.

Of the 2,890 farm operators reporting one acre of more of tree fruits, 2,743 reported owned land. Thus, 94.9% of the tree fruit farm operators own at least a part of their orchard operation. A total of 503 or 17.3% of tree fruit farm operators reported leasing or renting a part of their orchard operation.

Those farm operators under age 35 owned 5,206 acres (80.8% of their total acreage) and leased or rented another 1,241 acres. Those farm operators age 35 – 54 years owned 38,934 acres (89.3% of their total acreage) and leased or rented another 4,663 acres. Those 55 years and over owned 27,374 acres (86.2% of their total acreage) and leased or rented another 4,369 acres.

[8] Total acreage reported by farm operators as being part of their farm operations. Will be greater than the actual acreage due to double counting when multiple farm operators are reported.

Distribution of Owned and Rented Land By Level of Education and Average Age of Operator						
level of education of farm operators	**age of farm operators**	**total farm area area in acres**	**total area Owned Farms reporting**	**total area owned area in acres**	**total area Rented Farms reporting**	**total area rented area in acres**
all farm operators	under 35 years	6,447	240	5,206	85	1,241
all farm operators	35-54 years	43,597	1,330	38,934	268	4,663
all farm operators	55 years and over	31,742	1,169	27,374	149	4,369
all farm operators	**all farm operators**	81,918	2,743	71,627	503	10,291
university	under 35 years	965	61	819	14	146
university	35-54 years	12,970	368	11,666	57	1,305
university	55 years and over	4,318	180	4,231	10	87
university	**all farm operators**	18,338	613	16,788	82	1,551
post secondary	under 35 years	2,376	75	2,327	12	49
post secondary	35-54 years	7,776	366	6,781	79	995
post secondary	55 years and over	6,667	302	6,343	47	324
post secondary	**all farm operators**	16,931	748	15,557	139	1,374
grade 9-13	under 35 years	2,563	85	1,810	44	754
grade 9-13	35-54 years	20,560	461	18,707	86	1,854
grade 9-13	55 years and over	14,331	390	13,957	50	374
grade 9-13	**all farm operators**	37,635	940	34,645	182	2,990
less than grade 9	under 35 years	466	15	184	14	282
less than grade 9	35-54 years	2,247	135	1,736	46	512
less than grade 9	55 years and over	6,395	296	2,778	41	3,618
less than grade 9	**all farm operators**	9,019	441	4,641	100	4,378

Distribution of Tree Fruit Acreage by Size of Operation

The Table ***Distribution of Tree Fruit Farms by Size of Orchard by Level of Education and Age of Operator*** indicates that of the 280 tree fruit farm operators "under 35 years" some 160 operators or 57.1% have orchards of 10 acres or more. For the "35 – 54" years age group, some 525 farm operators or 37.5% of the 1,400 operators in this age category have orchards of 10 acres or more. For the "55 years and over" group, 355 farm operators or 29.5% of the 1,205 farm operators in this group have orchards of 10 acres or more. In total, 1,035 or 35.8% of the 2,890 tree fruit farm operators have orchards of 10 acres or more. The table goes on to present a full break-down of the orchard distribution based on size of orchard, level of education and age of operator.

Distribution of Tree Fruit Farms by Size of Orchard By Level of Education and Age of Operators						
level of education of farm operators	**age of farm operators**	**tree fruits 1.0-2.9 acres**	**tree fruits 3.0-9.9 acres**	**tree fruits 10.0-69.9 acres**	**tree fruits 70.0 acres and over**	**% of Orchards 10 Acres and Over**
all farm operators	under 35 years	25	90	160	0	58.18%
all farm operators	35-54 years	230	625	525	20	38.93%
all farm operators	55 years and over	275	570	355	0	29.58%
all farm operators	**all farm operators**	535	1,285	1,035	35	37.02%
university	under 35 years	0	35	40	0	53.33%
university	35-54 years	45	220	105	0	28.38%
university	55 years and over	30	80	70	0	38.89%
university	**all farm operators**	80	325	210	0	34.15%
post secondary	under 35 years	0	30	30	0	50.00%
post secondary	35-54 years	75	185	145	0	35.80%
post secondary	55 years and over	90	125	90	0	29.51%
post secondary	**all farm operators**	185	340	255	0	32.69%
grade 9-13	under 35 years	0	25	70	0	73.68%
grade 9-13	35-54 years	105	195	175	0	36.84%
grade 9-13	55 years and over	95	205	110	0	26.83%
grade 9-13	**all farm operators**	210	425	350	0	35.53%
less than grade 9	under 35 years	0	0	20	0	100.00%
less than grade 9	35-54 years	0	30	105	0	77.78%
less than grade 9	55 years and over	60	160	90	0	29.03%
less than grade 9	**all farm operators**	60	190	215	0	46.24%

Distribution of Tree Fruit Farm Operators Based on Hours Worked Off the Orchard

The Table ***Distribution of Tree Fruit Farm Operators Based on Hours Worked Off the Orchard*** indicates that 57.6% or 1,665 of the 2,890 tree fruit farm operators worked off the farm at least some of the time. While 390 or 13.5% worked off the farm more than 40 hours a week, another 590 or 20.4% worked 20 to 40 hours per week off the farm. Some 245 or 8.5% worked off the farm less than 20 hours per week.

What is not indicated in the data available is the magnitude of off farm work by spouses who may or may not be included as a farm operator. The nature of the work that is engaged in off the farm is also not indicated

From the data that is presented, there appears to be an inverse relationship between the level of education and the likelihood that the operator will work off the farm. The data for farm operators with university education indicates that 34.9% worked off the farm. The data shows that 55.9% of those with post secondary education and 62.3% of those with grade 9-13 worked off the farm while 79.8% of those farm operators with less than a grade 9 education worked off the farm.

Distribution of Orchard Operators By Level of Education and Average Age of Operator Based on Hours Worked off the Orchard						
level of education of farm operators	**age of farm operators**	**worked off the farm none**	**worked off the farm more than 40 hours per week**	**worked off the farm 20-40 hours per week**	**worked off the farm less than 20 hours per week**	**% of Farm Operators Working Off the Farm**
all farm operators	under 35 years	115	70	60	40	41.07%
all farm operators	35-54 years	605	255	400	145	43.21%
all farm operators	55 years and over	940	70	130	65	78.01%
all farm operators	**all farm operators**	1,665	390	590	245	57.61%
university	under 35 years	25	20	20	0	35.71%
university	35-54 years	100	85	135	60	26.67%
university	55 years and over	100	30	25	30	55.56%
university	**all farm operators**	220	130	185	95	34.92%
post secondary	under 35 years	30	30	0	15	40.00%
post secondary	35-54 years	155	90	125	45	38.27%
post secondary	55 years and over	260	25	20	0	83.87%
post secondary	**all farm operators**	445	140	145	70	55.97%
grade 9-13	under 35 years	50	20	30	0	47.62%
grade 9-13	35-54 years	270	70	120	25	56.25%
grade 9-13	55 years and over	305	15	65	15	75.31%
grade 9-13	**all farm operators**	620	105	210	55	62.31%
less than grade 9	under 35 years	0	0	0	0	0.00%
less than grade 9	35-54 years	90	0	20	20	64.29%
less than grade 9	55 years and over	275	0	20	0	88.71%
less than grade 9	**all farm operators**	375	0	45	35	79.79%

VI) DEMOGRAPHICS OF WASHINGTON STATE GROWERS

The smaller operations are slowly but steadily disappearing, with only the larger operations showing growth in numbers. The bulk of the loss of orchardists has occurred among those who have 25 acres or less, whereas nearly 100 new operations now have 100 acres or more. Currently, 22% of the orchardists in the state have more than 50 acres, ten percent have more than 100 acres, and 62% of the orchardists in the industry have less than 25 acres. Washington State apple orchards by size of operation.

Farms	1978	1982	1987	1992	1997
< 5 acres	2,229	1,786	1,527	1,380	1,182
5-25 acres	2,079	2,150	2,037	1,698	1,444
25-50 acres	762	790	803	729	641
50-100 acres	382	418	498	449	503
> 100 acres	174	262	330	340	437
Totals	5,626	5,406	5,195	4,596	4,207
	% of total				
< 25 acres	77	73	69	67	62
> 50 acres	10	13	16	17	22
>100 acres	3	5	6	7	10

SOURCE: USDA, NASS 1997 Census of Agriculture, Vol. 1: Part 51, Chapter 2. Table 43.
URL: http://www.nass.usda.gov/census/census97/volume1//toc 197.htm.

VII) ETHNIC ORIGINS OF OKANAGAN TREE FRUIT GROWERS

While ethnic groups are distributed across the various regions within British Columbia, there are concentrations of particular ethnic groups into particular regions. It is also true that particular ethnic groups are associated with particular farm types. Farm operators of Asian, African, Arab, or Pacific Island origins, including Chinese, Japanese, East Indian, Punjabi, Korean and Vietnamese origins tend to be concentrated in the operation of fruit farms.

B.C., Okanagan and Fruit Farm Distribution of Ethnic Groups - 1996[9]

	B.C.	Okanagan	Fruit
Western European	5470	1355	665
Dutch	2145	365	115
Eastern European	1005	315	210
Southern European	920	495	420
Portuguese	385	295	290
Northern European	910	195	90
British	7845	2200	990
French	430	160	80
Canadian & American	3730	800	370
Asian, Arab, African, Pacific Islands	1535	345	915
Chinese	405	15	105
Japanese	140	95	95
East Indian	780	190	595
Punjabi	125	45	115
Korean	50	0	0
Indo-Chinese	85	0	0
Vietnamese	35	0	0
Aboriginal	155	85	0
Other	11315	2990	1125
Total Farm Operators	**33005**	**9000**	4925
% Farm Operators		**27.3%**	14.9%

For example, 290 of the 385 farm operators of Portuguese ethnic origins or 75.3% operate fruit farms. Of the 385 Portuguese origin farm operators in British Columbia, 295 or 76.6% reside in the Okanagan. It should logically follow that 75% or more of the Portuguese farm operators in the Okanagan are operating fruit farms. Similarly, there are 595 farm operators of East Indian ethnic origins operating fruit farms within British Columbia. Thus, 595 of the 780 (76.2%) of the East Indian ethnic origin farm operators are the operators of fruit farms. A similar ratio of the 190 East Indian ethnic origin farm operators in the Okanagan would be expected to be the operators of fruit farms. It follows then that those farm operators of Portuguese, East Indian, and Punjabi origin in the Okanagan region are likely to be the operators of farms within the tree fruit sector.

VIII) COSTS AND RETURNS AT THE GROWER LEVEL

A) Grower Returns In British Columbia

The following table is based on the earlier work of Clint Ellison from 1995 and the more recent Planning For Profit Enterprise Budgets. Production was derived in part from the ARA OVTFA studies as well as from the Enterprise Budgets and input from BCMAF specialists. The Varietal

[9] BCMAF, *"Ethnic Origins of British Columbia Farm Operators"*, June 1999. Report by Terra Incognita Communications Inc.

annual prices were derived from the Agricultural Risk Management Branch Crop Insurance Program insurable values calculation background materials.

The production is based on a mature orchard producing 32,000 pounds of fruit per acre with a 95% pack-out.

While some varieties are returning better than average prices, the earlier price advantages have reduced slowly. The five-year average per pound contribution margin or return over variable costs shows positive returns for all varieties except McIntosh, Newtown, Red Rome and Winsap. However, the 1998 contribution margin is negative for Empire, Golden Delicious, McIntosh, Newtown, Red Delicious, Red Rome, Spartan, and Winesap.

The mix of varieties, stage of maturity which impacts on production, and overall management as well as site factors all impact on the results a specific orchardist will achieve.

As set forth in the OVTFA June 1999 *Replanting for the Future, Tree Fruit Yield and Price Survey*, a wide variety of results exist for replanted orchards in the Okanagan tree fruit industry. As enunciated in the general observations of the report, there is a wide variability in yields and gross revenues for all density ranges. Results ranged from $2,115 per acre average gross revenue in the fifth leaf for the bottom one third of the blocks to $13,164 per acre for the top one third.

The contribution margin is the difference between returns from production (price times quantity) and the variable costs to produce. The contribution margin must provide funds for interest, overhead and other indirect expenses as well as a return for living expenses, loan repayment and investment.

Grower Costs & Returns on a Variety Basis (cents per pound)

	5 year Average Returns	5 year Average Costs	5 year Average Contribution Margin	1998 Contribution Margin
BRAEBURN	0.2185	0.1142	0.1044	0.0409
ELSTAR	0.1463	0.1142	0.0322	0.0419
EMPIRE	0.1311	0.1142	0.0170	-0.0265
FUJI	0.3401	0.1142	0.2260	0.0675
GOLD DEL	0.1283	0.1142	0.0141	-0.0313
GR SMITH	0.2204	0.1142	0.1063	0.0903
JONAGOLD	0.1834	0.1142	0.0692	0.0096
MCINTOSH	0.1083	0.1142	-0.0059	-0.0313
NEWTOWN	0.0922	0.1142	-0.0220	-0.0256
RED DEL	0.1197	0.1142	0.0055	-0.0512
RED ROME	0.0798	0.1142	-0.0344	-0.0854
GALA	0.4247	0.1142	0.3105	0.1568
SPARTAN	0.1520	0.1142	0.0379	-0.0075

An orchard that produces a mix of varieties resulting in production that is 45% Red Delicious, 25% Gala, 20% Fuji, and 10% Braeburn would be expected to have provided the average results set forth in the following table. The 1998 return over operating costs would have been $0.033 per pound with a five-year average return over operating costs of $0.135 per pound.

Grower Costs & Returns on a Variety Basis (cents per pound) (45% Red Delicious, 25% Gala, 20% Fuji, 10% Braeburn)			
	Returns	Costs	Contribution Margin
1998	0.1515	0.1177	0.0338
5 year Average	0.2499	0.1142	0.1357

An orchard that is more traditional in its varietal make-up with 65% Red Delicious, 20% McIntosh, and 15% Spartan would be expected to have provided the average results set forth in the following table. In 1998, this orchard would have incurred an operating loss of $0.04 for every pound of apples produced. The five-year average return would be less than $0.01 per pound.

Grower Costs & Returns on a Variety Basis (cents per pound) (65% Red Delicious, 20% McIntosh, 15% Spartan)			
	Returns	Costs	Contribution Margin
1998	0.0770	0.1177	-0.0407
5 year Average	0.1223	0.1142	0.0081

For the sake of example, the same orchard as above, but with a 75% pack-out instead of a 95% pack-out combined with a crop at 90% of the production level utilized above would have provided the average results set forth in the following table. In 1998, such an orchard would have incurred operating losses of over $0.06 per pound. The five-year average return would also be a loss in the amount of approximately $0.027 per pound.

Grower Costs & Returns on a Variety Basis (cents per pound) (65% Red Delicious, 20% McIntosh, 15% Spartan) 75% Pack-Out, Short Crop at 90% of Expected			
	Returns	Costs	Contribution Margin
1998	0.0608	0.1277	-0.0669
5 year Average	0.0965	0.1238	-0.0273

Various scenarios, including varietal mixes, pack-outs, crop levels, and cost regimes can be assessed. In general, the conclusion of such analysis is simply stated as being dependent upon a mix of varieties that maintain above average returns combined with high pack-outs and average or above average levels of production. There is little margin for error between profit and loss situations. Marketing channels and the associated returns are another variable to be considered in such analysis since any management or marketing decisions that increase grower returns generally translate in higher levels of returns over operating costs.

APPENDIX A

Statistical Tables

Distribution of Apple Trees and Apple Acreage By Level of Education and Age of Operator					
level of education of farm operators	age of farm operators	Farms reporting apple trees	% of Tree Fruit Farms Reporting Apple Trees	apple trees area in acres	% Of Total Tree Fruit Acreage In Apple trees
all farm operators	under 35 years	257	91.79%	2,924.8	72.17%
all farm operators	35-54 years	1,268	90.57%	12,216.9	78.52%
all farm operators	55 years and over	1,022	84.81%	6,969.6	72.88%
all farm operators	**all farm operators**	2,551	88.27%	22,146.6	75.78%
university	under 35 years	66	94.29%	667.7	89.53%
university	35-54 years	310	82.67%	3,318.5	80.01%
university	55 years and over	163	90.56%	864.2	66.96%
university	**all farm operators**	544	86.35%	4,900.6	78.53%
post secondary	under 35 years	64	85.33%	668.5	66.29%
post secondary	35-54 years	377	93.09%	3,542.7	83.44%
post secondary	55 years and over	249	80.32%	2,191.5	79.34%
post secondary	**all farm operators**	695	87.42%	6,442.1	79.86%
grade 9-13	under 35 years	97	92.38%	1,177.4	65.34%
grade 9-13	35-54 years	446	92.92%	4,127.6	79.14%
grade 9-13	55 years and over	334	82.47%	2,400.6	77.05%
grade 9-13	**all farm operators**	881	88.54%	7,739.1	76.05%
less than grade 9	under 35 years	25	100.00%	363.0	82.22%
less than grade 9	35-54 years	135	96.43%	1,228.0	62.62%
less than grade 9	55 years and over	276	89.03%	1,507.2	63.00%
less than grade 9	**all farm operators**	432	91.91%	3,064.7	64.66%

Distribution of Bearing and Non-Bearing Apple Trees By Level of Education and Average Age of Operator					
level of education of farm operators	age of farm operators	apple trees total number of trees	apple trees number of bearing trees	apple trees number of non-bearing trees	% of non-bearing trees
all farm operators	under 35 years	943,918	689,388	254,530	26.97%
all farm operators	35-54 years	4,138,645	3,510,427	628,219	15.18%
all farm operators	55 years and over	1,795,243	1,520,687	274,556	15.29%
all farm operators	**all farm operators**	6,888,030	5,728,770	1,159,260	16.83%
university	under 35 years	324,839	125,142	199,697	61.48%
university	35-54 years	1,236,000	947,402	288,598	23.35%
university	55 years and over	189,785	171,024	18,761	9.89%
university	**all farm operators**	1,774,794	1,253,942	520,851	29.35%
post secondary	under 35 years	183,596	173,949	9,647	5.25%
post secondary	35-54 years	1,163,280	1,035,362	127,918	11.00%
post secondary	55 years and over	837,855	745,321	92,534	11.04%
post secondary	**all farm operators**	2,198,292	1,966,814	231,478	10.53%
grade 9-13	under 35 years	266,192	252,460	13,731	5.16%
grade 9-13	35-54 years	1,276,676	1,120,874	155,802	12.20%
grade 9-13	55 years and over	492,189	352,517	139,671	28.38%
grade 9-13	**all farm operators**	2,042,782	1,731,929	310,852	15.22%
less than grade 9	under 35 years	146,514	128,003	18,511	12.63%
less than grade 9	35-54 years	463,338	408,041	55,298	11.93%
less than grade 9	55 years and over	271,740	249,111	22,630	8.33%

less than grade 9	**all farm operators**	871,169	775,892	95,276	10.94%

Distribution of Tree Fruit Farm Assets

The 2,890 tree fruit farm operators hold farm assets with a value of some $1.5 billion of which nearly $1.4 billion is in land and buildings. Those 280 (9.7% of total tree fruit farm operators) of farm operators "under age 35" hold $194.2 million or 13.0% of the total farm capital. The 1,400 tree fruit farm operators "35 – 54 years" of age (accounting for 48.4% of total tree fruit farm operators) account for $789.4 million or 53.0% of the total farm capital held by tree fruit farm operators. The 1,205 (41.7% of the total tree fruit farm operators) tree fruit farm operators "55 years and over" hold $502.7 million or 33.8% of the total farm capital held by tree fruit farm operators.

A further breakdown of the distribution of farm assets is provided in the table "Distribution of Farm Assets by Level of Education and Average Age of Operator".

Distribution of Farm Assets
By
Level of Education and Average Age of Operator

level of education of farm operators	age of farm operators	# of farm operators reporting 1+ acre tree fruit	total farm capital market value$	total value land and buildings market value$	total value machinery market value$	total value livestock & poultry market value$
all farm operators	under 35 years	280	194,181,271	180,588,926	12,964,930	627,415
all farm operators	35-54 years	1,400	789,372,961	731,136,713	55,593,564	2,642,697
all farm operators	55 years and over	1,205	502,684,824	457,601,203	42,182,256	2,901,368
all farm operators	**all farm operators**	**2,890**	1,488,690,772	1,371,577,798	110,929,955	6,183,036
university	under 35 years	70	43,235,901	40,728,423	2,234.712	272,766
university	35-54 years	375	230,576,466	217,152,204	12,986,409	437,855
university	55 years and over	180	78,959,077	72,488,293	6,144,951	325,834
university	**all farm operators**	**630**	355,981,860	333,400,345	21,527,251	1,054,265
post secondary	under 35 years	75	55,301,928	50,678,681	4,432,938	190,309
post secondary	35-54 years	405	175,172,838	159,302,484	15,090,522	779,839
post secondary	55 years and over	310	136,017,964	124,919,155	10,314,723	784,086
post secondary	**all farm operators**	**795**	368,923,085	337,125,235	30,031,889	1,765,970
grade 9-13	under 35 years	105	82,064,823	76,749,675	5,169,242	145,906
grade 9-13	35-54 years	480	304,492,845	280,854,079	22,218,734	1,420,036
grade 9-13	55 years and over	405	176,604,018	159,861,248	15,012,497	1,730,271
grade 9-13	**all farm operators**	**995**	565,613,579	519,700,600	42,597,369	3,315,611
less than grade 9	under 35 years	25	10,507,219	9,550,807	956,412	0
less than grade 9	35-54 years	140	79,187,740	73,884,188	5,303,552	0
less than grade 9	55 years and over	310	110,855,354	100,099,823	10,706,236	49,300
less than grade 9	**all farm operators**	**470**	198,128,467	181,295,320	16,784,198	48,953

Regional Distribution of Ethnic Groups Within British Columbia - 1996								
	B.C.	Cariboo	Kootenay	Lower Mainland	Nechako/ North Coast	Okanagan	Peace River	Vancouver Island
Western European	5470	345	275	2270	355	1355	380	495
Dutch	2145	55	60	1310	120	365	45	200
Eastern European	1005	45	85	360	65	315	55	80
Southern European	920	45	20	275	25	495	0	50
Portuguese	385	0	0	65	0	295	0	0
Northern European	910	70	40	290	85	195	0	135
British	7845	755	485	2025	420	2200	420	1535
French	430	40	30	90	35	160	35	45
Canadian & American	3730	390	285	770	255	800	755	
Asian, Arab, African, Pacific Islands	1535	0	0	1095	0	345	0	80
Chinese	405	0	0	370	0	15	0	15
Japanese	140	0	0	30	0	95	0	0
East Indian	780	0	0	530	0	190	0	50
Punjabi	125	0	0	80	0	45	0	0
Korean	50	0	0	45	0	0	0	0
Indo-Chinese	85	0	0	75	0	0	0	0
Vietnamese	35	0	0	35	0	0	0	0
Aboriginal	155	35	0	20	0	85	0	0
Other	11315	1045	910	2940	535	2990	830	1625
Total Farm Operators	**33005**	**2780**	**2150**	**10150**	**1790**	**9000**	**2605**	**4540**
% Farm Operators		**8.4%**	**6.5%**	**30.8%**	**5.4%**	**27.3%**	**7.9%**	**13.8%**

Distribution of Ethnic Groups By Farm Type Within British Columbia - 1996											
	B.C.	Cattle	Dairy	Field Crops Except grains & oilseeds	Fruit	Grain & Oilseeds except wheat	Hog	Poultry & Egg	Vegetable	Wheat	Misc. Specialty
Western European	5470	1075	910	410	665	80	90	510	180	60	1255
Dutch	2145	270	685	115	115	0	75	260	60	0	480
Eastern European	1005	155	45	120	210	25	0	70	60	0	265
Southern European	920	130	50	30	420	0	0	25	40	0	170
Portuguese	385	35	0	0	290	0	0	0	0	0	25
Northern European	910	295	45	75	90	0	0	40	50	0	250
British	7845	1815	405	685	990	65	65	390	250	0	2605
French	430	40	15	20	80	0	0	20	15	0	195
Canadian & American	3730	1310	230	330	370	90	35	115	75	40	835
Asian, Arab, African, Pacific Islands	1535	20	0	30	915	0	0	45	200	0	250
Chinese	405	0	0	15	105	0	0	0	135	0	120
Japanese	140	0	0	0	95	0	0	0	0	0	20
East Indian	780	0	0	0	595	0	0	35	55	0	55
Punjabi	125	0	0	0	115	0	0	0	0	0	0
Korean	50	0	0	0	0	0	0	0	0	0	35
Indo-Chinese	85	0	0	0	0	0	0	0	0	0	60
Vietnamese	35	0	0	0	0	0	0	0	0	0	25
Aboriginal	155	50	0	35	0	0	0	0	0	0	45
Other	11315	2535	490	970	1125	135	115	635	380	55	3440
Total Farm Operators	**33005**	7445	2230	2735	4925	425	350	1880	1275	170	9330
% Farm Operators		22.6%	6.8%	8.3%	14.9%	1.3%	1.1%	5.7%	3.9%	<1.0%	28.3%